

Energy Revision

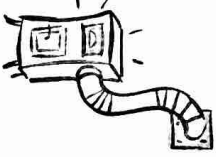
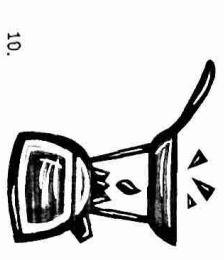
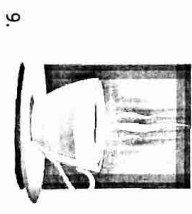
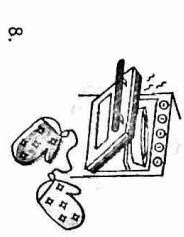
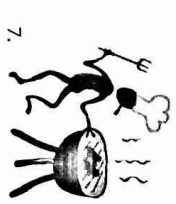
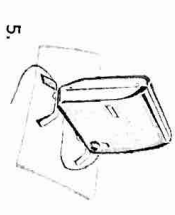
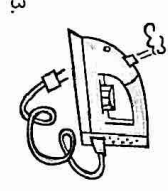
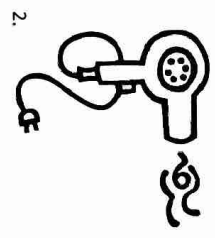
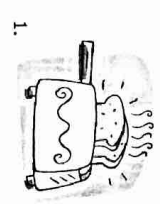
Worksheet: Methods of Heat Transfer (conduction, convection, and radiation)

Define conduction:

Define convection:

Define radiation:

Identify the method of heat transfer that takes place in each illustration. Some illustrations may show more than one form of heat transfer.



In each of the following situations, identify the method of heat transfer taking place (conduction, convection, radiation). More than one process may be occurring.

1. Hot coffee is stirred with a spoon, the spoon gets hot due to _____.
2. A chair is placed several feet from a fire in a fireplace. The fireplace has a glass screen. The side of the chair facing the fireplace gets warm because of _____.
3. A certain type of decorative lamp contains colored liquids. These liquids form globbs that break off and rise to the top of the liquid. The globbs rise due to _____.
4. Near the ceiling of a room the air is warmer. The warm air rises because of _____.
5. A college student holds the back of his hand near an iron to see if it is hot. Heat is transferred to his hand by _____.
6. A heater is placed under one corner of a water bed mattress. Warm water moves throughout the mattress because of _____.
7. A certain type of stainless steel cookware has a layer of copper applied to the bottom to help it heat evenly. The copper transfers heat to the pan by _____.
8. In a swimming pool, the water near the surface is slightly warmer. The warm water rises because of _____.
9. One end of a copper rod is placed in a flame of a Bunsen burner. Small pieces of wax placed along the rod melt at progressively larger distance from the flame. Heat is transferred through the rod by _____.
10. A house burns down. On the house across the street, all of the vinyl siding is twisted and warped by the heat. The heat was transferred across the street by _____.
11. Warm air over the beach rises while cooler dense air from the ocean rushes in due to _____.
12. The metal skewer gets so hot that you drop your marshmallow in the campfire because of _____.
13. A huge rock at the state park gets so hot during the day that you can't sit on it from _____.
14. You lay on that same rock at night so that you can keep warm by _____.
15. A fireman feels a door and it is hot from the fire on the other side due to _____.
16. The cause of weather systems on earth is _____.
17. You are in the top bunk of a bunk bed and you want to turn the air conditioner on while your friend on the bottom bunk is fine is caused by _____.

MM *MM* *MM* *MM*

'Types of Energy'
Energy comes in several different forms. The eight forms of energy are:
Sound, Light Heat, Kinetic, Electrical, Nuclear, Potential, Chemical

Complete the sentences below, using each form of energy only once.

1. The party popper gave a bang, which was energy.
2. When the magnesium burned, it glowed brightly, giving energy.
3. The magnesium is a chemical, so it contains energy.
4. The electric heater became warm, giving out energy.
5. The wires from the power supply carried energy to the heater.
6. When the spring in the Jack-in-the-box was compressed, it stored energy.
7. When the toy car moved, it had energy.
8. The radioactive rock sample contains energy.

Using the list of the eight types of energy you have learned about, answer the following:-
9. What type(s) of energy does each of the following produce?

1. electric kettle → and
2. radio → and
3. gas cooker → and
4. lamp → and
5. guitar → and
6. electric fan → and

10. What type of energy does the diesel fuel in a school bus have?
11. What kind of energy does the bus have when it is moving?
12. When the bus is parked at the top of the hill, what type of energy does it have?
13. Where does a Bunsen burner get its energy from?
14. What two types of energy does the Bunsen produce when it is working? and
15. Where does a torch get its energy from?

Energy can be categorised into 2 main groups: Potential and Kinetic (moving)
16. Which are the 3 types of potential energy?

17. Where are all the energy originally come from? and
18. Give 4 examples of chemical energy.,,, and

Information on Different Forms of Energy

Energy forms are either **potential** or **kinetic**. **Potential** energy comes in forms that are stored including — chemical, gravitational, elastic, and nuclear. **Kinetic** energy forms are doing work — like electrical, heat, light, motion, motion or mechanical and sound.

What is energy?

Energy makes change possible. We use it to do things for us. It moves cars along the road and boats over the water. It bakes a cake in the oven and keeps ice frozen in the freezer. It plays our favourite songs on the radio and lights our homes. Energy is needed for our bodies to grow and it allows our minds to think. Scientists define energy as the ability to do work. Modern civilization is possible because we have learned how to change energy from one form to another and use it to do work for us and to live more comfortably.

Forms of energy

Energy is found in different forms including light, heat, chemical, and motion. There are many forms of energy, but they can all be put into two categories: potential and kinetic.

Potential Energy Potential energy is stored energy. There are several forms of potential energy.	Kinetic Energy (Energy in Action) Action or Motion Energy — of waves, electrons, atoms, molecules, substances, and objects.
<p>Chemical energy is energy stored in the bonds of atoms and molecules. Batteries, biomass, petroleum, natural gas, and coal are examples of stored chemical energy. Chemical energy is converted to thermal energy when we burn wood in a fireplace or burn gasoline in a car's engine. Chemical energy is found in food (carbohydrate, fat and protein), chocolate and candies.</p> <p>NB: No energy is given by Vitamins, minerals, dietary fibres and water</p> <p>Elastic Potential energy is energy stored in objects by tension. Compressed springs and stretched rubber bands are examples of stored mechanical energy.</p> <p>Nuclear energy is energy stored in the nucleus of an atom — the energy that holds the nucleus together. Very large amounts of energy can be released when the nuclei are combined or split apart. Nuclear power plants split the nuclei of uranium atoms in a process called fission. The sun combines the nuclei of hydrogen atoms in a process called fusion.</p> <p>Gravitational Potential energy is energy stored in an object's height. The higher and heavier the object, the more gravitational energy is stored. When you ride a bicycle down a steep hill and pick up speed, the gravitational energy is being converted to motion energy. Hydropower is another example of gravitational energy, where the dam "piles" up water from a river into a reservoir.</p>	<p>Radiant energy is electromagnetic energy that travels in transverse waves. Radiant energy includes visible light, x-rays, gamma rays and radio waves. Light is one type of radiant energy. Sunshine is radiant energy, which provides the fuel and warmth that make life on Earth possible.</p> <p>Thermal energy, or heat, is the vibration and movement of the atoms and molecules within substances. As an object is heated up, its atoms and molecules move and collide faster. Geothermal energy is the thermal energy in the Earth.</p> <p>Motion energy is found in the movement of objects. The faster they move, the more energy is stored. It takes energy to get an object moving, and energy is released when an object slows down. Wind is an example of motion energy. A dramatic example of motion is a car crash, when the car comes to a total stop and releases all its motion energy at once in an uncontrolled instant.</p> <p>Sound is the movement of energy through substances in longitudinal (compression/rarefaction) waves. Sound is produced when a force causes an object or substance to vibrate — the energy is transferred through the substance in a wave. Typically, the energy in sound is far less than other forms of energy.</p> <p>Electrical energy is delivered by tiny charged particles called electrons, typically moving through a wire. Lightning is an example of electrical energy in nature, so powerful that it is not confined to a wire.</p>